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**Graphite Creek milestone nears**

Graphite One Resources Inc. Dec. 7 reported that it is nearing the completion of a preliminary economic assessment for its Graphite Creek project near Nome, Alaska. Raising more than CS$2.8 million, the company has achieved a number of major milestones in 2016. These milestones were reached during a comprehensive product development program managed by TRU Group Inc., a technology metals consultant with expertise along the entire graphite-graphene supply chain. This program produced purified graphite from Graphite Creek averaging 99.98 percent graphitic carbon.

When TRU Group first began examining Graphite Creek material late in 2014, its technicians recognized distinguishing features they described as spheroidal, thin, aggregate and expanded. The graphite specializing consultant postulated that these distinctive characteristics could lead to different specialized applications with minimal processing. These unique and naturally occurring properties have prompted Graphite One to apply for the trademark, STAX, an acronym to describe Graphite Creek graphite.

Further testing found that more than 74 percent of the STAX flake graphite could be turned into spherical graphite without milling. This is a monumental achievement considering that only about 40 percent of the best-performing flake graphite found in any other known deposit can be converted to spherical graphite, even using high-end equipment. In later phases of testing completed this year, TRU Group measured the performance of the spheroidized graphite produced from STAX material in coin cells typically used in watches and similar devices. This testing confirmed high performance, repeatability and stability of the spherical graphite produced from the western Alaska deposit – all indicators of high-quality graphite for lithium-ion batteries. Graphite One and TRU Group are working on the production of exploratory grade samples of coated, spherical graphite for testing by potential end-users.

"Our program indicated the unique characteristics of our STAX natural flake graphite, which more than met our expectations for performance on the key metrics for spheroidal graphite," said Graphite One CEO Anthony Huston. "Our goal for Graphite One is to become a reliable producer of high-quality graphite for the rapidly evolving energy and high-tech sectors." Graphite One said a preliminary economic assessment for the Graphite Creek project, a milestone originally slated for the end of 2016, is now targeted for completion by the end of January 2017.

**Hecla, MSHA salute our miners**

Hecla Mining Company Dec. 6 recognizes its miners, see NEWS NUGGETS page 11

**NEWS NUGGETS**

Compiled by Shane Lasley

**MINE SAFETY**

By SHANE LASLEY

Mining News

Week of December 11, 2016

**Dam lessons learned**

**After Golder review, ICMM binds members to more stringent TSF management**

By SHANE LASLEY

Mining News

The rock leftover after the desired minerals are recovered is one of the most fundamental parts of mining. Typically stored behind massive earthen embankments, these tailings also pose a threat to human life and the environment, if not properly managed. Committed to sustainable mining, the International Council on Mining and Metals has adopted new tailings dam management measures that its 23 member companies must abide by and hopes non-member mining companies adopt similar procedures.

ICMM decided to take action following the high-profile tailings dam failures at Mount Polley, a copper-gold mine in British Columbia operated by Imperial Metals, and Mariana, an iron ore in Brazil operated under a joint venture between BHP Billiton and Vale.

While the downstream effects of the Mount Polley failure in 2014 were limited due to its remote location upstream of a large lake that helped absorb the impact, the Samarco disaster in 2015 was upstream of three towns and killed 19 people, including 14 mine employees.

"ICMM and its members are committed to drive safety and environmental improvements in the industry," said ICMM CEO Tom Butler. "After the tragic failure of the Samarco tailings dam, we had to determine how we could best help to minimize the risk of the recurrence of such a catastrophic event."

**Golder report**

To find out what can be done to prevent another tragic tailing dam failure, ICMM pulled together a panel of renowned tailings specialists and experts from within its membership to review tailings management practices across the breadth of the council's 23 mining companies.

The review panel hired Golder Associates, a trusted consulting and design company with more than 50 years of experience, to dig further into this problem.

While Golder, as well as other investigations, identified the structural issues that ultimately led to the dam failures at Samarco and Mount Polley, the consulting firm said modern engineering, design and construction practices are adequate to prevent such tailings impoundment failures.

"The long-standing lies not in the state of knowledge, but rather in the efficacy with which that knowledge is applied." –Golder Associates

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Six key elements

In response to the Golder report, the top executives of all 23 ICMM member companies endorsed a position statement "that commits members to minimize the risk of catastrophic failures of tailings dams by adopting six key elements of management and governance." I am delighted that as a result of the review, CEOs of the world's 23 leading mining companies committed to a new ICMM framework on how to further enhance the safety management of tailings dams," said van Zyl.

These six key elements of the ICMM position statement are:

- Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of tailings storage facility risks.
- The financial and human resources needed to support continued tailings storage facility management and governance are clearly set out throughout a facility's life cycle.
- Risk management associated with tailings storage facilities includes risk identification, an appropriate control regime and the verification of control performance.
- Risks associated with potential changes are assessed, controlled and continually evaluated to avoid inadvertently compromising tailings storage facility integrity.
- Processes are in place to recognize and respond to impending failure of tailings storage facilities and mitigate the potential impacts arising from a potentially catastrophic failure.
- Internal and external review and assurance processes are in place so that controls for tailings storage facility risks can be comprehensively assessed and continually improved.

Under each of these broad elements are more specific criteria for which the ICMM member companies are bound.

**Hope adopted by non-members**

ICMM and Golder hope the lessons learned from this review result in more stringent tailings management across the wider mining community.

"We were determined to take action at the global level and all of our member companies have adopted this new binding agreement," said ICMM CEO Butler. "We hope that non-member companies will also consider adopting this framework in order to help enhance the whole industry's performance."

Terry Eldridge, senior project reviewer at Golder Associates, added, "I hope that this report will be widely read, not just by ICMM members, but by the mining industry as whole so we can continually improve the safety of the industry."
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The company contained the porphyry potential in 2015, when it stepped out from the previous shallow reverse circulation drilling completed by Amax in 1989-1990 with deeper core (both holes lasted year). SC 15-03, cut meter averaging 0.71 percent copper-equivalent about 245 meters southwest of the historical drilling. Collared about 125 meters further southwest of SC 15-03, the first hole of the 2016 drill program, SC 16-01, cut 434.5 meters averaging 0.12 grams per metric ton gold, 0.36 percent copper, or about 0.57 percent copper-equivalent. A 207-meter section of this hole averaged 0.05 percent tungsten trioxide. Freegold said early mineralogical work has confirmed that the tungsten present at Hill 1835 is in the form of wolframite, which is typically recovered by gravity concentration. A further 120 meters southwest, SC 16-02 cut 409.5 meters averaging 0.41 percent copper-equivalent. A 409.6-meter section of this hole averaged 0.03 percent tungsten trioxide. Five holes of the 2016 program targeted Hill 1710, a 6,000- by 1,500-meter geophysical and geological anomaly situated roughly 2,500 meters northwest of Hill 1835. The holes drilled at Hill 1710 were spaced roughly 400 meters apart, starting on the western edge of the geology. Each hole intersected both copper and molybdenum mineralization with the copper values increasing as the drilling moved to the northeast. Hole 16-03, the westernmost hole, cut 172.6 meters of 0.53 percent copper and 0.34 percent molybdenum. Hole SC 16-04, collared about 440 meters to the east, averaged 0.05 percent copper and 0.014 percent molybdenum over its entire 426.5-meter length. Hole SC 16-05, collared about 800 meters northeast of hole four, averaged 0.07 percent copper and 0.01 percent molybdenum over the entire 516 meters. Hole SC 16-07 averaged 0.08 percent copper and 0.009 percent molybdenum over its entire 396-meter length, including 0.15 percent copper and 0.009 percent molybdenum in the top 70.8 meters. “The Shorty Creek target represents an exciting porphyry discovery in Alaska that has the potential to host a significant copper-gold-molybdenum resource,” said Freegold President and CEO Kristina Walcott. “They work in every one of the fifty states, and provide the raw materials for heat, electricity, roads and bridges, and countless consumer products, from electronics to cosmetics. Even toothpaste is composed of minerals obtained by miners,” MSHA quoted in its Miner’s Day salute. Baker agrees. “While it is easy to take mining for granted, it is important to take a moment and recognize that without mining, we would not enjoy the lives that we have today. We have never forgotten the integral role our mines play in the fabric of the communities in which they operate. And while the industry has experienced tremendous progress in safety, efficiency and environmental awareness at our mines, we always strive to do even better,” said the Hecla CEO. Hecla’s Greens Creek Mine in Southeast Alaska is one of the largest and lowest-cost primary silver mines on the planet. Through the first nine months of 2016, Greens Creek produced 7 million oz. of silver, putting this underground mine on pace to reach nearly 9 million oz. this year. The mine is also expected to produce 53,000 oz. of gold as well as valuable quantities of zinc and lead.

Second Shorty Creek copper-gold target tapped

Freegold Ventures Ltd. Dec. 6 said the 2016 drill program at it Shorty Creek project in Interior Alaska has confirmed the presence of a copper-gold-molybdenum porphyry system with an alteration-mineralization footprint that covers roughly 2,500 acres. The company contained the porphyry potential in 2015, when it stepped out from the previous shallow reverse circulation drilling completed by Amax in 1989-1990 with deeper core (both holes lasted year). SC 15-03, cut meter averaging 0.71 percent copper-equivalent about 245 meters southwest of the historical drilling. Collared about 125 meters further southwest of SC 15-03, the first hole of the 2016 drill program, SC 16-01, cut 434.5 meters averaging 0.12 grams per metric ton gold, 0.36 percent copper, or about 0.57 percent copper-equivalent. A 207-meter section of this hole averaged 0.05 percent tungsten trioxide. Freegold said early mineralogical work has confirmed that the tungsten present at Hill 1835 is in the form of wolframite, which is typically recovered by gravity concentration. A further 120 meters southwest, SC 16-02 cut 409.5 meters averaging 0.41 percent copper-equivalent. A 409.6-meter section of this hole averaged 0.03 percent tungsten trioxide. Five holes of the 2016 program targeted Hill 1710, a 6,000- by 1,500-meter geophysical and geological anomaly situated roughly 2,500 meters northwest of Hill 1835. The holes drilled at Hill 1710 were spaced roughly 400 meters apart, starting on the western edge of the geology. Each hole intersected both copper and molybdenum mineralization with the copper values increasing as the drilling moved to the northeast. Hole 16-03, the westernmost hole, cut 172.6 meters of 0.53 percent copper and 0.34 percent molybdenum. Hole SC 16-04, collared about 440 meters to the east, averaged 0.05 percent copper and 0.014 percent molybdenum over its entire 426.5-meter length. Hole SC 16-05, collared about 800 meters northeast of hole four, averaged 0.07 percent copper and 0.01 percent molybdenum over the entire 516 meters. Hole SC 16-07 averaged 0.08 percent copper and 0.009 percent molybdenum over its entire 396-meter length, including 0.15 percent copper and 0.009 percent molybdenum in the top 70.8 meters. “The Shorty Creek target represents an exciting porphyry discovery in Alaska that has the potential to host a significant copper-gold-molybdenum resource,” said Freegold President and CEO Kristina Walcott. “They work in every one of the fifty states, and provide the raw materials for heat, electricity, roads and bridges, and countless consumer products, from electronics to cosmetics. Even toothpaste is composed of minerals obtained by miners,” MSHA quoted in its Miner’s Day salute. Baker agrees. “While it is easy to take mining for granted, it is important to take a moment and recognize that without mining, we would not enjoy the lives that we have today. We have never forgotten the integral role our mines play in the fabric of the communities in which they operate. And while the industry has experienced tremendous progress in safety, efficiency and environmental awareness at our mines, we always strive to do even better,” said the Hecla CEO. Hecla’s Greens Creek Mine in Southeast Alaska is one of the largest and lowest-cost primary silver mines on the planet. Through the first nine months of 2016, Greens Creek produced 7 million oz. of silver, putting this underground mine on pace to reach nearly 9 million oz. this year. The mine is also expected to produce 53,000 oz. of gold as well as valuable quantities of zinc and lead.
success of Kennady and its receipt of this award. We intend to honor this award by moving the company toward further discovery of kimberlites and their advancement into diamond resources at Kennady North. “Kennady is currently working toward the finalization of a preliminary economic assessment for its namesake project and, if things continue to look good, the company plans to initiate a feasibility study for building a Northwest Territories’ next diamond mine at Kennady North in 2017. Kennady shares this year’s Mines and Money Exploration Company of the Year award with co-recipient NexGen Energy, who was recognized for its impressive uranium discoveries in the Athabasca Basin in northern Saskatchewan.

Agnico grabs interest in White Gold; Yukon

Agnico Eagle Mines Ltd. Dec. 6 announced an agreement to acquire 19.93 percent of the G4G Capital Corp.’s issued and outstanding shares. In late October, G4G Capital announced finalization of an option to acquire 21 properties covering 2,490 square kilometers (roughly 615,300 acres) of the White Gold district in the Yukon from legendarily successful prospector Shawn Ryan and Wildwood Exploration Inc., a company owned by Ryan and his wife, Cathy Wood. To better reflect its focus, G4G Capital plans to change its name to White Gold Corp. and move its headquarters from Vancouver, B.C. to Toronto, Ont. G4G shareholders will vote on the name change at a special meeting scheduled for Dec. 19. Agnico Eagle will pay C$1.20 per share to advance the company’s large portfolio of projects in the Yukon Territory.

IDM further expands Red Mountain zones

IDM Mining Ltd. Dec. 6 reported results from the final 13 underground core holes completed during the 2016 season at its Red Mountain gold-silver project 15 kilometers (nine miles) east of Stewart, British Columbia. Highlights from this batch of results include 27 meters averaging 6.2 grams per metric ton gold and 23.25 g/t silver in U16-1214, an infill hole in the AV zone; 6.49 meters of 21.36 g/t gold and 18.093 g/t silver in U16-1218, a step-out hole below the AV zone; 34.01 meters of 8.85 g/t gold and 11.28 g/t silver, in U16-1220, an infill and metallurgical hole at the AV zone; 18.22 meters of 9.12 g/t gold and 27.87 g/t silver in U16-1224, a step-out hole below the JW zone; and six meters of 12.75 g/t gold and 44.19 g/t silver in U16-1226, a step-out to the south of the Marc zone. “The majority of IDM’s drilling during 2016 was planned to upgrade resources and gather technical data for our feasibility study; however, these results have extended the known limits to mineralization in all three primary zones with mineralization open for further expansion to the north, south and down-dip,” said IDM Mining President and CEO Rob McLeod. “Of particular significance is U16-1224, which intersected the widest portion of mineralization identified so far at the JW zone, suggesting potential for another thick area of mineralization as seen in the Marc and AV zones.” An updated resource estimate slated for completion in early 2017 will be incorporated into an ongoing feasibility study program. IDM is planning further underground resource expansion and exploration drilling at Red Mountain in 2017.

Alliance nabs coastal Nunavut gold project

Transition Metals Corp. and Nunavut Resources Corp. Nov. 30 announced the signing of an agreement with Nunavut Tunngavik Inc. for exploration of the Arcadia Bay property, an Inuit-owned parcel on the Coronation Gulf coast in Nunavut. The property hosts Archean lode-gold style mineralization with a historical resource of 572,067 metric tons grading 9.6 grams per metric ton gold. While this resource, calculated in 1983, does not meet NI 43-101 standards, Transition considers this historical estimate as an indication of the presence of mineralization. This resource is based on a near surface 680-motor long section of the 4,200-meter North Vein, one of a series of north-trending gold-bearing vein systems identified on the property. Many of the vein systems have been traced for great distance at surface with good apparent continuity including the more than 1,200-meter Sidewalk Vein, which has returned up to 9.4 g/t gold over 12.5 meters in historical drilling.

Transition Metals and Nunavut Resources, a subsidiary of Kitikmeot Inuit Association, are working under an alliance to identify and seize opportunities that will attract investment and lead to the discovery of economic ore deposits, and the development of new mines and infrastructure in the Kitikmeot region of Nunavut, Canada. The mineral exploration agreement grants the Alliance exclusive rights to explore for minerals within CO-31 and sets parameters to acquire a mineral production lease. Nunavut Resources President Scott Northey said, “We are pleased to consolidate our ownership interest on the Arcadia Bay project to include the portions of the property with established historical resources. The alliance will be actively seeking partnership funding or investment to help us initiate programs of work on the property in 2017.” The Arcadia Bay property is located along the coast of the Arctic Ocean, roughly 25 kilometers (15.5 miles) west of the proposed port facility at the terminus of the planned Izok Road Corridor. The Nunavut government and Nunavut Resources recently signed a memorandum of understanding to build the port and a 350-kilometer (220 miles) road that links the deep-water Arctic seaport to Contwoyo Lake, near the area of the Izok Lake zinc-copper mine project being advanced by MMG Ltd.